PATENT ABSTRACTS OF JAPAN

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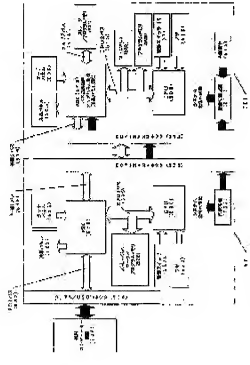
(54) PORTABLE INFORMATION TERMINAL EQUIPMENT



(57)Abstract:

PROBLEM TO BE SOLVED: To increase the degree of freedom of portability by enabling a first portable terminal sharing data to be connected with an external computer equipment.

SOLUTION: This portable information terminal equipment is provided with a program memory 502, a work memory 503, a storage/program memory 504, a power source switch 507, a liquid crystal panel 505, a touch panel 506, an ASIC 509, a built-in battery 512, a CPU 508, a bus switching circuit for switching an address bus, a data bus and a memory control signal by signals inputted from a first portable terminal 521 and a 68PIN female connector connected to the first portable terminal.

[0001]

[Field of the Invention]Especially the invention in this application relates to the personal Personal Digital Assistant device driven with an internal battery about information terminal equipment.

[0002]

[Description of the Prior Art]In recent years, advanced features and downsizing of a computer and its peripheral equipment are progressing quickly. As a result, conventional deferment type information terminal equipment is also going to the miniaturization convenient to carry. For example, these days, the personal Personal Digital Assistant device (the following "personal digital assistant" is called) called a "electronic notebook", a "palmtop computer", "Personal Digital Assistant (PDA)", etc. is produced commercially.

[0003]Here, above-mentioned PDA is the information machines and equipment for the individuals who can be carried, and it has a pen input function, a data communication facility, etc. on the basis of the function of notebooks (notebook made of paper), such as schedule management, an address book, and a memo. In the commercial scene, "Newton" which American Apple announced in 1993, announcing [the Japanese sharp company] "Zaurus", and "Palm Pilot" which American 3COM company announced are known.

[0004]In the above-mentioned personal digital assistant, "Personal Information Manager (PIM)" software, such as schedule management, an address book, a telephone directory, and a memo pad, is incorporated, A data retrieval function and a function which connect with an external instrument, and transmits and receives data are equipped, and it has an advantage which is not in the conventional notebook (notebook made of paper).

[0005]Here, above-mentioned PIM is a tool for an individual to manage information, and is a kind of software which performs schedule management, an address book, project management, etc. "PIM" may point out an electronic notebook, a palmtop computer, and the personal digital assistant itself that had these functions like PDA.

[0006]In the above conventional personal digital assistants, in order to think portability as important, the keyboard used with a usual personal computer and word processor was removed, instead the special input means is incorporated.

[0007]The method of arranging the input key of ** small number and inputting a predetermined command in the combination of two or more input keys in such an input means, ** Display a software keyboard on the display screen which has a touch panel, Generally the method of inputting a command to the displayed software keyboard, the method of judging and executing an input command by

carrying out the handwritten input of the character on ** touch panel, and performing character recognition with software, etc. are used.

[0008]

[Problem(s) to be Solved by the Invention]

Thus, although the conventional personal digital assistant has above various input means, these input means are on operation and have the badness of user-friendliness. That is, it must input into a small input key a single character every with a pen or a finger when inputting the command by (1) user, and there is a problem of it being complicated and requiring time when inputting a command.

(2) There is a problem of a recognition rate being insufficient also in the method of inputting a character in handwriting on a touch panel, and requiring perseverance and time for inputting a lot of data.

(3) Although it can put in and carry to a bag, the chest pocket of a suit, etc. in the conventional personal digital assistant, there is a problem that it is too large in putting into the pocket of a shirt and carrying.

(4) Although it is common for slimming down of a personal digital assistant to use a button type lithium cell, To a central arithmetic unit, a liquid crystal display panel, and power consumption, such as memory rewriting, since cell capacity is not enough, there is a problem that a battery life becomes short and prolonged continuous use cannot be performed as a result.

[0009]The purpose of the invention in this application is to provide the pocket-size new personal Personal Digital Assistant device which solved the above-mentioned conventional problem, and according to the invention in this application. In actual use, the ease of the input of the command by a user or an input of data and portability can be reconciled, and the cell of small capacity can realize prolonged operation. A user interface enables offer of the system which can be attained also among other Personal Digital Assistant devices, without being dependent on external computer apparatus.

[0010]

[Means for Solving the Problem]

In order to attain the purpose of the above-mentioned statement, composition of a Personal Digital Assistant device for individuals of the invention in this application, A memory measure which are the 1st Personal Digital Assistant device connectable with external computer apparatus, and a Personal Digital Assistant device which has an interface, and stores information on said 1st Personal Digital Assistant device, An input means for displaying selectively information on a request of the information stored in a displaying means for displaying information stored in the memory measure concerned, and said memory measure, If it is in providing a Personal Digital Assistant device possessing a cell for supplying a power supply and is further put in another way

as a control means which performs drive controlling of said displaying means, and said displaying means and said control means, After connecting with external computer apparatus, taking out information stored in a memory measure in said external computer apparatus and storing in the 1st memory measure, The 2nd memory measure that is a Personal Digital Assistant device which becomes portable after taking out and storing information which connected with the 1st Personal Digital Assistant device carried and displayed, and was stored in said 1st memory measure, and stores said 1st information, A displaying means for displaying information stored in said 2nd memory measure, It is characterized by providing a cell for supplying a power supply to an input means for displaying selectively information on a request of the information stored in said 2nd memory measure, a control means which performs drive controlling of said displaying means, and said displaying means and said control means.

[0011]Composition of a personal Personal Digital Assistant device of the invention in this application takes out selectively the 2nd desired information of the information stored in said 1st memory measure in said 1st Personal Digital Assistant device, and stores it.

[0012]Composition of a personal Personal Digital Assistant device of the invention in this application possesses a connector for connecting with said 1st Personal Digital Assistant device.

[0013]Composition of a personal Personal Digital Assistant device of the invention in this application possesses 68 pin female connector of PCMCIA specification for connecting with said 1st Personal Digital Assistant device.

[0014]Composition of a personal Personal Digital Assistant device of the invention in this application performs switching control of a signal between said 1st Personal Digital Assistant device.

[0015]Composition of a personal Personal Digital Assistant device of the invention in this application performs switching control of a power supply between said 1st Personal Digital Assistant device.

[0016]In composition of a personal Personal Digital Assistant device of the invention in this application, said 2nd memory measure comprises Static Randam Access Memory (SRAM).

[0017]In composition of a personal Personal Digital Assistant device of the invention in this application, said 2nd memory measure comprises a flash memory.

[0018]In composition of a personal Personal Digital Assistant device of the invention in this application, said displaying means comprises a liquid crystal panel.

[0019]In composition of a personal Personal Digital Assistant device of the invention in this application, said input means comprises a touch panel.
[0020]In composition of a personal Personal Digital Assistant device of the invention in this application, said input means comprises a dial switch.
[0021]In composition of a personal Personal Digital Assistant device of the invention in this application, said control means comprises a microcomputer.
[0022]Composition of a personal Personal Digital Assistant device of the invention in this application comprises an exclusive IC which accumulated said control means on a microcomputer and one semiconductor chip. In composition of a personal Personal Digital Assistant device of the invention in this application, said cell comprises a lithium coin cell.
[0023]
[Embodiment of the Invention]Drawing 1 is an appearance front view of the personal Personal Digital Assistant device (the following, personal digital assistant) by one embodiment of the invention in this application. It explains in detail, referring to drawings for one embodiment of the invention in this application below.
[0024]The specification of the Personal Digital Assistant device of the invention in this application shown in drawing 1 comprises the housing 101, the connector 102 and the liquid crystal panel 103, the electric power switch 104, and the touch panel 105 fundamentally. The outside size of the case 101 is 9.5 mm in 54 wide mmxwide 57-mmx thickness like a graphic display. Thus, the personal digital assistant of the invention in this application is extremely excellent in portability for what is called a "pocket size." Here, about an outside dimension, the grade with which it is satisfied of "pocket-size" specification is sufficient.
[0025]The 1st Personal Digital Assistant device which the **connector 102** as a means to take an interface with the exterior mentions later. It is a contact button for electrically connecting with (considering it as the 1st personal digital assistant hereafter), The shape is a PCMCIA female connector of 68PIN based on a PCMCIA (Personal Card Computer Memory Card International Association) standard or a JEIDA standard (Japan Electronic Industry Development Association). Here, it is not restrained by the standard of the above-mentioned specification in the invention in this application.
[0026]The liquid crystal panel 103 is an object for data display as a displaying means, It is a liquid crystal panel the STN monochrome reflective type of the pixel number 160x120, or STN color reflective type, and has a pixel number which can display the character of 26 characters x 12 lines on the screen of the liquid crystal panel 103 in the case of 6x10 fonts for alphanumeric characters.

[0027]Here, the electric power switch 104 is a switch of the toggle which switches ON and OFF of the power supply of a personal digital assistant. Since drawing 1 is before powering on, nothing is displayed on the liquid crystal panel 103.
[0028]In the surface of the liquid crystal panel 103 as a displaying means. The touch panel 105 is formed as an input means, and starting of application software and the change of a screen can be easily performed by pushing the icon and menu part which were displayed on the screen of the liquid crystal panel 103 with a finger or a nib.
[0029]On the liquid crystal panel 201 of drawing 2, each icon of the calendar icon 202, the ToDo restoration icon 203, the address book icon 204, and memo pad icon 205 grade, When application software correspondence is carried out, and it is displayed, for example, the icon 202 is pushed with a finger or a nib, it is a mimetic diagram showing the function which calendar software is loaded and is started from the program memory 502 shown in below-mentioned drawing 5.
[0030]Drawing 3 (a) and (b) is an explanatory view of a connection method which connects the personal digital assistant of the invention in this application to the 1st personal digital assistant. The outline views of drawing 3 (a) are the mimetic diagram which looked at the 1st "palm-sized" personal digital assistant 301 from the transverse plane, and a mimetic diagram which looked at the "pocket-size" personal digital assistant 302 of the invention in this application from the rear face. The outline views of drawing 3 (b) are the mimetic diagram which looked at the 1st personal digital assistant 301 from the rear face, and a mimetic diagram which looked at the personal digital assistant 302 from the transverse plane. Drawing 3 (a) and (b) shows the state of inserting the personal digital assistant 302 in the slot 303 of the 1st personal digital assistant 301. The personal digital assistant 301 has provided the male connector of 68 pins by which shape was based on PCMCIA specification in the inside of the slot 303. And the personal digital assistant 302 of the invention in this application is connectable with the male connector of the personal digital assistant 301 because shape has the female connector 304 of 68 pins based on PCMCIA specification and inserts the female connector 304 in the slot 303. Although the sizes of a portable device differ from the above-mentioned explanation according to the purpose of use, it seems that two or more portable devices which carried out mutually-independent carry out exchangeable [of the data] easily, and it is understood intuitively that it is controllable to mutual. In the invention in this application, it is one of the big features by having an user interface function by the displaying means and an input means mutually to have the outstanding high function of controllable flexibility mutually.
[0031]Drawing 4 is the connecting relation of the personal digital assistant 402 of the invention in this application, the 1st personal digital assistant 401, and the

external computer apparatus 403 an explanatory view of one shown example, and The 1st personal digital assistant 401, By connecting with a serial or a Universal Serial Bus (USB) interface via the cradle 405, external computer apparatus also becomes the personal digital assistant 402 downloadable [data] easily. Here, you may be not the thing limited to external computer apparatus but other portable information devices.

[0032]Drawing 5 is a personal digital assistant of the invention in this application shown in drawing 4, the 1st personal digital assistant, and a circuit block figure at the time of the connected state of external computer apparatus. In drawing 5, the personal digital assistant 501 of the invention in this application, The program memory 502 and the work memory 503 as a memory measure, Storage / program memory 504, the electric power switch 507, and the touch panel 506, The buzzer 510, the liquid crystal panel 505, the internal battery 512, and central arithmetic unit 2 (CPU2 is called hereafter) 508 as a control means, It comprises the power source switching circuit 511, the 68PIN female connector 513, and exclusive IC(ASIC:Application Specific Integrated Circuit) 509 corresponding to various control means.

[0033]The address bus of the program memory 502 and the work memory 503, a data bus, and a memory control signal, CPU508 and ASIC509 including bus switching control / touch-panel control / liquid crystal panel control circuit, It is connected by CPU2 bus 515 and the address bus, data bus, and memory control signal of storage / program memory 504 ASIC509, It is connected by memory 2 bus 504, and the liquid crystal panel 505 and the touch panel 506 are further connected to ASIC509, it is connected to the internal battery 512 and the connector 513, and the power supply circuit 511 supplies a power supply to the whole personal digital assistant 501.

[0034]The electric power switch 507 operated by the user is connected to CPU508. The buzzer 510 is connected to CPU508.

[0035]The 68PIN female connector 513 linked to the 1st personal digital assistant 521 is connected to ASIC509.

[0036]Furthermore, in order that ASIC509 may access storage / program memory 504 from the 1st personal digital assistant 521 with the signal inputted as the liquid crystal drive control circuit which controls the liquid crystal panel 505 from the 1st personal digital assistant, It has a bus switch circuit for switching the address bus, data bus, and memory control signal which are outputted from CPU508 to the address bus, data bus, and memory control signal wire which are outputted from the 1st personal digital assistant. The above-mentioned circuit is constituted in one as an IC circuit for exclusive use.

[0037]Drawing 6 is a circuit diagram showing the address bus switch circuit of ASIC508. If the 1st personal digital assistant 521 connects with the connector 513

of the personal digital assistant 501, The external bus 2 bus power source 601 and the external 2 bus-address signal 602 input into the selector 611 via the external 2 bus 516, the memory 2 bus-address signal 604 is replaced at the CPU2 bus-address signal 603, and the external 2 bus-address signal 602 is outputted.

[0038]CPU528, and the storage / work / program memory 522 linked to CPU1 bus is connected to the external 2 bus 516 via ASIC529 in the 1st personal digital assistant 521.

[0039]A memory control bus and a data bus by operation of the switch circuit of ASIC508. If the 1st personal digital assistant 521 connects with the connector 513 of the personal digital assistant 501, READ/WRITE [memory 2 bus signal is replaced with CPU2 bus signal, the CPU1 bus signal of the 1st personal digital assistant 521 linked to external 2 bus is outputted, and / CPU528 of the 1st personal digital assistant / storage / program memory 504 of the personal digital assistant 501].

[0040]It enables this to transmit the data stored in the storage / work / program memory 522 of the 1st personal digital assistant to the storage / program memory 504 of the personal digital assistant 521.

[0041]Here, data transfer by CPU528 of the 1st personal digital assistant 521 is performed by the command stored in storage / work / program memory 522, or the command stored in the storage/program memory of the personal digital assistant 501 (504).

[0042]When the data stored in the storage / work / program memory 522 of the 1st personal digital assistant is larger than the storage / program memory 504 of the personal digital assistant 521 here, A user can choose and transmit only desired data with the command stored in storage / work / program memory 522, or the command stored in the storage/program memory of the personal digital assistant 501 (504).

[0043]In drawing 5, the 1st personal digital assistant 521 Storage / work / program memory 522, It comprises the electric power switch 527, the touch panel 526, the buzzer 530, the liquid crystal panel 525, the internal battery 532, CPU528, the 68PIN male connector 533, the serial/USB connector 534, and ASIC529 corresponding to various control means.

[0044]The address bus, data bus, and memory control signal of a program / work / program memory 522, CPU528 and ASIC529 including touch-panel control / liquid crystal panel control circuit, The address bus, data bus, and memory control signal of the external 1 bus 536 which is connected by CPU1 bus 535 and connects with the personal digital assistant 501 are connected with ASIC529, and further The liquid crystal panel 525, The touch panel 526 is connected to ASIC529, and the **internal battery 532 will supply a power supply to the**

personal digital assistant 501 via the connector 533 at **, if a power supply is supplied to the whole personal digital assistant 521.

[0045]The electric power switch 527 operated by the user is connected to CPU528. The buzzer 530 is connected to CPU528.

[0046]It is connected to the 68PIN male connector 533 connected with the personal digital assistant 501 ASIC522, and the serial/USB connector connected with external computer apparatus via the PC1 bus 537.

[0047]CPU528 of the 1st personal digital assistant 521 transmits the data stored in external computer apparatus to storage / work / program memory 522 via a serial/USB interface, ASIC529, and the CPU1 bus 535.

[0048]Drawing 7 is a block diagram showing the power source switching circuit 511 of the personal digital assistant 501 of drawing 5. Alone, the personal digital assistant 501 operates with the internal battery 512. If the personal digital assistant 501 is connected to the 1st personal digital assistant 521, the external bus 2 bus power source 703 will be supplied from the external 2 bus 516, When the voltage detection circuits 701 control the regulator 702, the power supply supplied from the inner battery 512 is intercepted, and the external 2 bus power source supplied from the 1st personal digital assistant is supplied to the personal digital assistant 501 whole. As a result, consumption of the cell capacity of the internal battery 512 is cut down.

[0049]Drawing 8 (b) is the mimetic diagram which looked at the personal digital assistant of the invention in this application from the transverse plane, and drawing 8 (a) is a mimetic diagram showing the A-A section of drawing 8 (b). There is the circuit board 805 which mounted the circuit component 804 in both sides like a graphic display, and the internal battery 807 connects with the circuit board 805 in the field where the liquid crystal panel 803 is reverse. The touch panel 802 pastes the surface of the liquid crystal panel 803. And they are seven layer systems which put the circuit component 804, the circuit board 805, the liquid crystal panel 803, and the touch panel 802 by the top cover 810 and the bottom cover 809 like a graphic display. The 68PIN female connector 811 is installed in the end of the circuit board 805, the battery cover 808 is opened and closed, and the internal battery 807 is detached and attached.

[0050]Although the flash memory which is nonvolatile memory is used for it, SRAM may be used for it as long as it is satisfactory, even if data is eliminated [the storage/program memory of the personal digital assistant of the invention in this application], when an inner battery is lost.

[0051]When the CPU of the 1st personal digital assistant operates with the command in the storage memory/program memory of the personal digital assistant of this invention, some memory sectors of a flash memory or SRAM may be used as a program area.

[0052]When the CPU of the 1st personal digital assistant operates with the command in the storage memory/program memory of the personal digital assistant of this invention, a part of sector of a flash plate or a SRAM memory may be used as a program area using both a flash memory and SRAM.
[0053]When the CPU of the 1st personal digital assistant operates with the command in the storage memory/program memory of the personal digital assistant of this invention, ROM may be used as a program area.
[0054]Finally, the outline view of the Personal Digital Assistant device which is one example of the invention in this application is explained to drawing 9. Since the portion of the displaying means is designed thinly, it excels in portability and the front display surface product is considerably secured as compared with the rim of a case as shown by a diagram, it excels in two or more character Hitoshi's recognition nature, and the display nature of the icon.
[0055]In the top longitudinal direction of a displaying means, it becomes possible to constitute the appearance outstanding on aesthetic sense, without giving design top monotony, since gently-sloping inclination is formed.
[0056]
[Effect of the Invention]As explained above, there are various advantages in this invention. Namely, since it is small size, the personal digital assistant of (1) this invention is convenient to carry, and the newest data input, It can connect with the 1st personal digital assistant more large-sized than the personal digital assistant of this invention which shares external computer apparatus and data, and can input easily by transmitting the newest data of the 1st personal digital assistant to the storage memory in a portable device.
(2) Desired data can be chosen and transmitted when the data stored in the 1st personal digital assistant cannot transmit all to the storage memory of a personal digital assistant.
(3) When connecting with the 1st personal digital assistant and inputting data, consumption of the cell capacity of the internal battery of a personal digital assistant can be cut down by using the power supply of the 1st personal digital assistant.
Therefore, this invention can be applied in various fields and industrial applicability is large.

[Claim 1]A Personal Digital Assistant device which has an interface with the 1st Personal Digital Assistant device connectable with external computer apparatus etc., comprising:
A memory measure which stores information on said 1st Personal Digital Assistant device.

A displaying means for displaying information stored in the memory measure concerned.
An input means for displaying selectively information on a request of the information stored in said memory measure.
A cell for supplying a power supply to a control means which performs drive controlling of said displaying means, and said displaying means and said control means.

[Claim 2]The Personal Digital Assistant device according to claim 1 taking out selectively desired information of the information in said 1st Personal Digital Assistant device, and storing it.
[Claim 3]The Personal Digital Assistant device possessing a connector for connecting with said 1st Personal Digital Assistant device according to claim 1.
[Claim 4]The Personal Digital Assistant device possessing 68 pin female connector of PCMCIA specification for connecting with said 1st Personal Digital Assistant device according to claim 1.
[Claim 5]The Personal Digital Assistant device according to claim 1 performing switching control of a signal between said 1st Personal Digital Assistant device.
[Claim 6]The Personal Digital Assistant device according to claim 1 performing switching control of a power supply between said 1st Personal Digital Assistant device.
[Claim 7]The Personal Digital Assistant device according to claim 1 with which said memory measure comprises Static Randam Access Memory (SRAM).
[Claim 8]The Personal Digital Assistant device according to claim 1 with which said memory measure comprises a flash memory.
[Claim 9]The Personal Digital Assistant device according to claim 1 with which said displaying means comprises a liquid crystal panel.
[Claim 10]The Personal Digital Assistant device according to claim 1 with which said input means comprises a touch panel.
[Claim 11]The Personal Digital Assistant device according to claim 1 with which said input means comprises a dial switch.
[Claim 12]The Personal Digital Assistant device according to claim 1 with which said control means comprises a microcomputer.
[Claim 13]The Personal Digital Assistant device according to claim 1 which comprises an exclusive IC which accumulated said control means on a microcomputer and one semiconductor chip.
[Claim 14]The Personal Digital Assistant device according to claim 1 with which said cell comprises a lithium coin cell.
[Claim 15]A memory measure which is a Personal Digital Assistant device which has an interface with the 1st Personal Digital Assistant device connectable with

external computer apparatus etc., and stores information on said 1st Personal Digital Assistant device, An input means for displaying selectively information on a request of the information stored in a displaying means for displaying information stored in the memory measure concerned, and said memory measure, A cell for supplying a power supply to a control means which performs drive controlling of said displaying means, and said displaying means and said control means is provided, A Personal Digital Assistant device which control and data communications are possible for said interface to mutual, and it constitutes the 1st Personal Digital Assistant device mechanically so that desorption is possible, and is characterized by things.

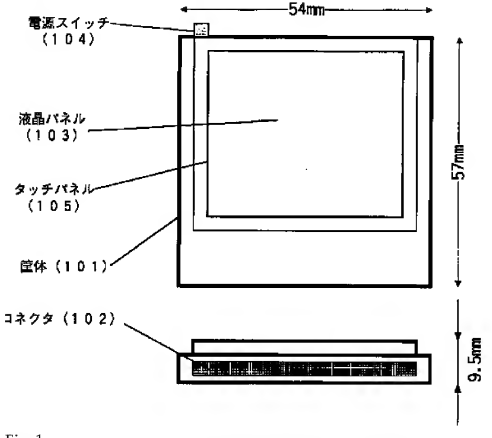


Fig. 1

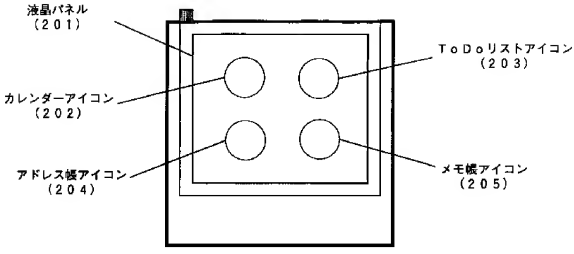


Fig 2

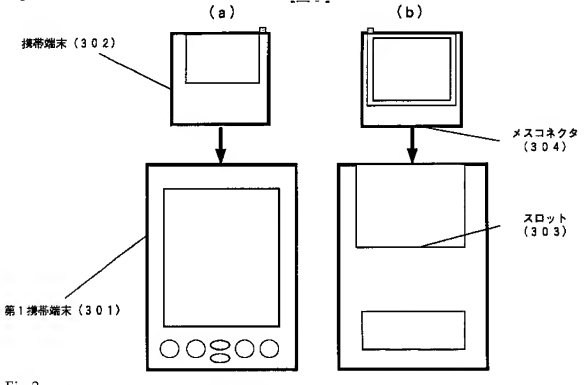


Fig 3

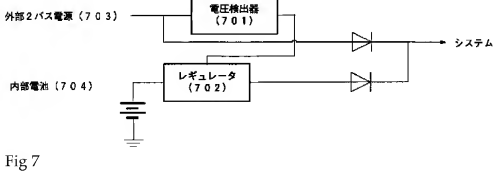
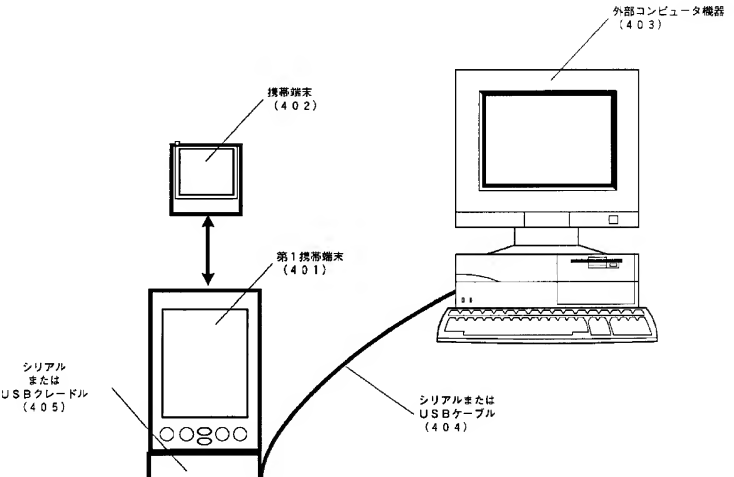
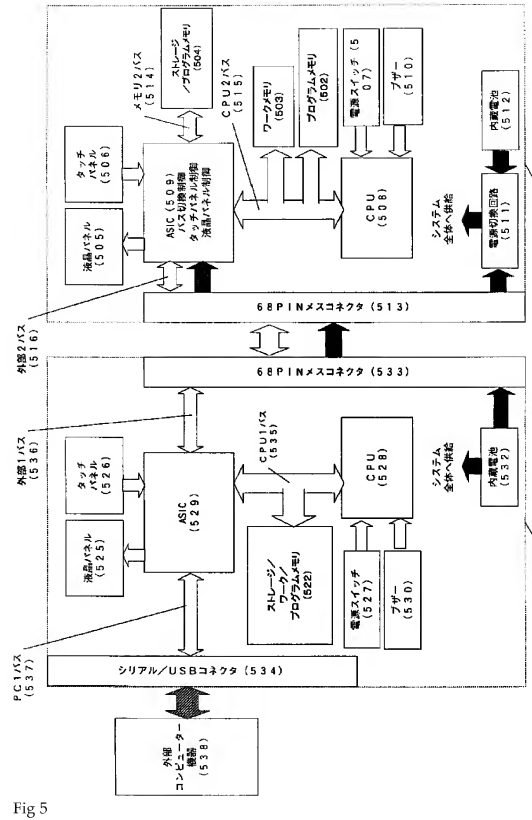


Fig 7

Fig 4


外部コンピュータ機器
（４０３）
携帯端末
（４０２）
第１携帯端末
（４０１）
シリアル
または
ＵＳＢクレードル
（４０５）
シリアルまたは
ＵＳＢケーブル
（４０４）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PCIバス (537)
シリアル/USBコネクタ (534)
外部1バス (536)
外部2バス (516)
68PINメスコネクタ (533)
液晶パネル (525)
タッチパネル (526)
ASIC (529)
CPU1バス (535)
ストレージ/ワーク/プログラムメモリ (522)
電源スイッチ (527)
ブザー (530)
CPU (528)
システム全体へ供給
内蔵電池 (532)
521
68PINメスコネクタ (513)
液晶パネル (505)
タッチパネル (506)
ASIC (509) バス切換制御 タッチパネル制御 液晶パネル制御
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ストレージ/プログラムメモリ (504)
CPU2バス (515)
ワークメモリ (503)
プログラムメモリ (502)
電源スイッチ (507)
ブザー (510)
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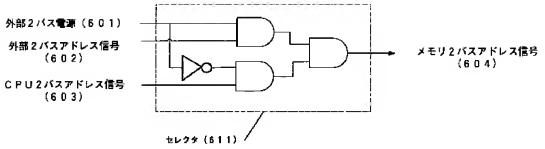
システム全体へ供給
電源切換回路 (511)
内蔵電池 (512)
501

Fig 5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メモリ2バスアドレス信号
（６０４）
セレクタ（６１１）

Fig 6

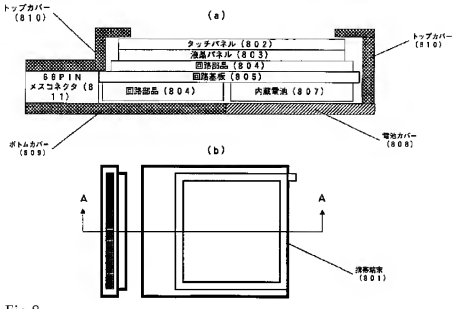
(a)
トップカバー
（８１０）
タッチパネル（８０２）
液晶パネル（８０３）
回路部品（８０４）
回路基板（８０５）
68PIN
メスコネクタ（８１１）
回路部品（８０４）
内蔵電池（８０７）
トップカバー
（８１０）
ボトムカバー
（８０９）
電池カバー
（８０８）
(b)
A
A
液晶装置
（８０１）

Fig 8

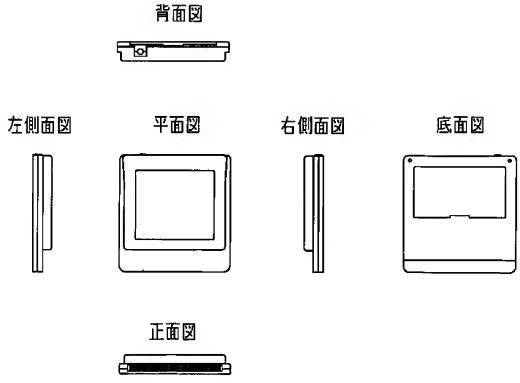

Fig 9